



2045 Metropolitan Transportation Plan (MTP)

Alternatives Analysis

www.bit.ly/DCHC-MTP-Alternatives

MPO Board
August 9, 2017

Presentation Outline

- ▶ Schedule
- ▶ Alternatives
- ▶ Metrics and Maps
- ▶ Today's action

Schedule

Board Actions

- ▶ June – Released Deficiency Analysis ✓
- ▶ August – Release Alternatives Analysis **TODAY**
- ▶ September – Conduct public hearing; discuss LPA expectations
- ▶ October – Release Locally Preferred Alternative (LPA)
- ▶ December – Adopt 2045 MTP

Air Quality
Determination
Report is not
required.



Schedule

Dates to Remember

- 2/27/18 = MPO must incorporate safety targets
- 4/10/18 = MPO's MTP is frozen (no amendments until it complies)
 - 5/27/18 = MTP must be FAST Act compliant

Alternatives Analysis

- ▶ Purpose: staff, public and Board discuss different solutions to deficiencies
- ▶ Preferred Option likely to be combination of the Alternatives Analysis scenarios
- ▶ Alternatives not fiscally-constrained
- ▶ Today's presentation has overview -- Full complement of tables and maps on Web site

Alternatives

Mobility Investment

Development Foundations

Scenario	Highway Network	Transit Network	SE Data
Alternatives			
Mod-MTP	2040 MTP	2040 MTP (i.e., LRT, CRT, BRT)	Community Plan
Mod-Hwy	2040 MTP, plus several major highways+	No Fixed Guideway (i.e., no LRT, CRT, BRT)	Community Plan
Asp-MTP	2040 MTP	2040 MTP (i.e., LRT, CRT, BRT)	AIM High
Asp-Transit	2040 MTP	Fixed Guideway, plus <ul style="list-style-type: none"> LRT to Carrboro CRT to Alamance County 15/30min bus headway 	AIM High
Baseline and E+C			
2013 – Baseline	2013	2013	2013
2015 -- Baseline	2015	2015	2015 – interpolate SE Data
2045 E+C	E+C	E+C	Community Plan

Land Use

SE Data Guide Totals*

Population				
County	2013	2045	2013-45	% change
Chatham*	41,543	72,110	30,567	74%
Durham	286,210	475,091	188,881	66%
Orange	139,289	194,867	55,578	40%
<i>Total</i>	<i>467,042</i>	<i>742,068</i>	<i>275,026</i>	<i>59%</i>
Employment				
County	2013	2045	2013-45	% change
Chatham*	9,339	17,718	8,379	90%
Durham	192,877	342,910	150,033	78%
Orange	64,212	107,791	43,579	68%
<i>Total</i>	<i>266,428</i>	<i>468,419</i>	<i>201,991</i>	<i>76%</i>

* Only includes portion of Chatham County in the modeling area.

Fast growth, especially Durham and Chatham counties.

Employment growth outpaces population growth.

* Guide totals are same for Community Plan (CP) and AIM-High

Land Use

- ▶ **Community Plan (CP)**
 - Based on adopted local land use plans, or “most likely”
 - Used in Deficiency Analysis

- ▶ **AIM–High** (Anchor Institutions & Mainstays)
 - Development proposals push the envelope, but still market possible
 - Based on draft information from DOLRT station area planning project

Performance Measures*

- ▶ General indicators of overall system:
 - Mobility Performance (e.g., travel time)
 - Mode Choice
 - Travel volume (e.g., VMT, VHT)

- ▶ Not specific to corridor or project.

- ▶ Useful for overall comparison of MTP Alternatives

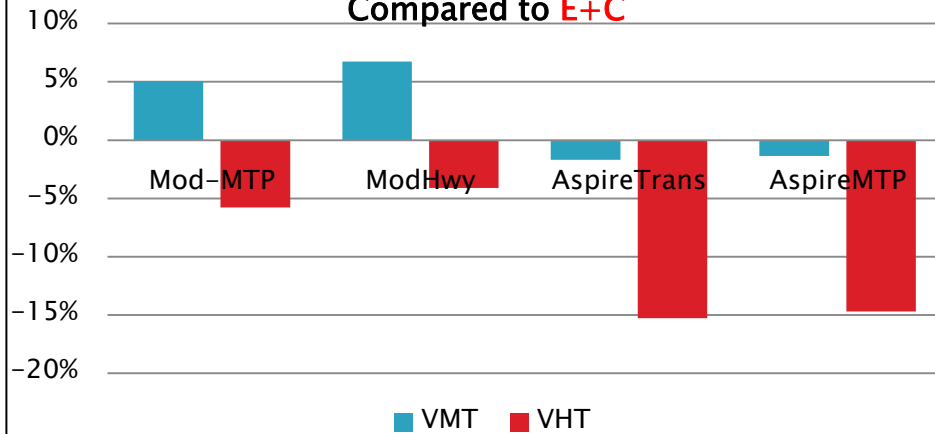
	Name =	Baseline	E+C	ModMTP	ModHwy	AspireTrans	AspireMTP
	SE Data ==>	2013	2045	2045 CP	2045 CP	2045 AIM High	2045 AIM High
	Transportation Network ==>	2013	E+C	2040 MTP	2040 MTP/ Hwy+, No FG	2040 MTP/ Transit+	2040 MTP
1	Performance Measures						
1.1.1	Total Vehicle Miles Traveled (VMT-daily)	12,698,821	21,108,837	22,179,755	22,533,494	20,751,593	20,822,867
1.1.1a	Total Vehicle Miles Traveled (VMT-per capita)	30	31	33	34	31	31
1.2.1	Total Vehicle Hours Traveled (VHT-daily)	314,735	665,310	626,849	638,079	563,611	567,436
1.2.1a	Total Vehicle Hours Traveled (VHT-per capita)	0.75	0.99	0.93	0.95	0.84	0.85

* Available by county!

Performance Measures

Total Daily VMT & VHT --

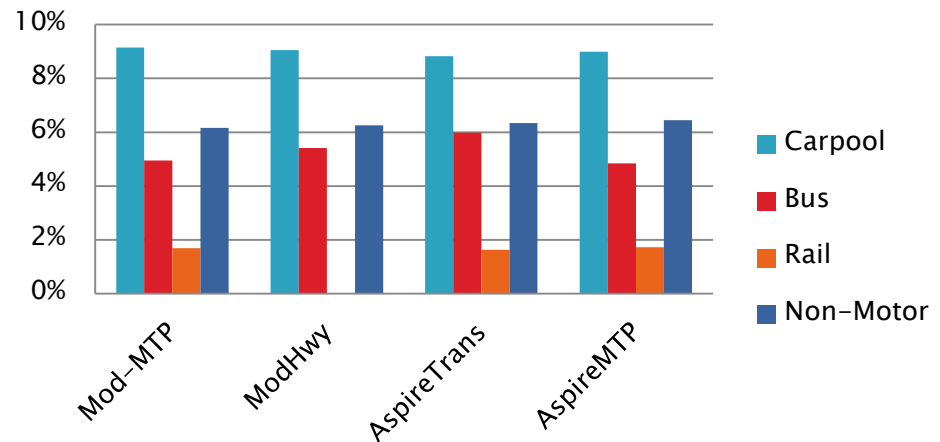
Compared to E+C



- All Alternatives show significant improvement over E+C. (no build scenario)
- Aspirational show greater improvement than Moderate for congestion related metrics

- Some metrics show little variation among Alternatives

Mode Share (non-SOV work trip)

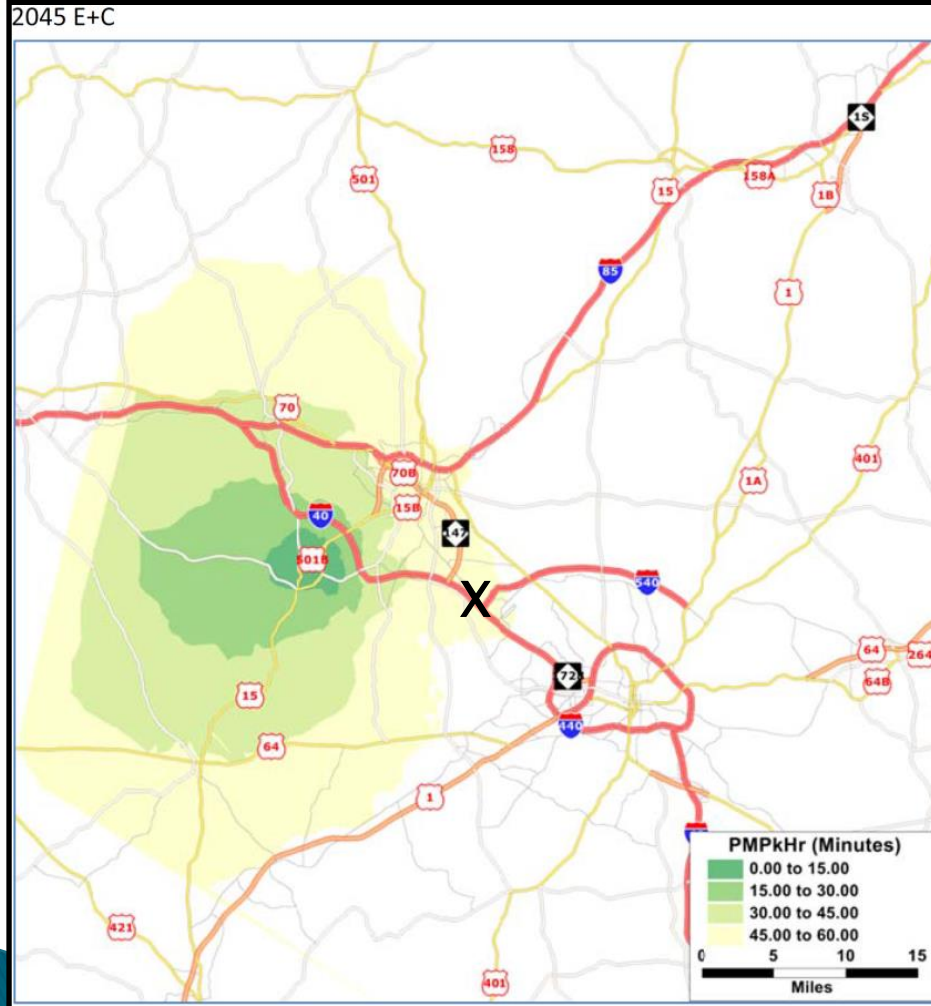


Travel Isochrones

- ▶ More specific than Performance Measures – can start to see corridor mobility.
- ▶ Based on afternoon commute from four selected centers:
 - Downtown Durham
 - Chapel Hill/Carrboro
 - RTP
 - Downtown Raleigh
- ▶ Map illustrates “contours” for 15-, 30-, 45-minute, etc. commutes from the centers.
- ▶ Four maps (Alternatives) for each center:

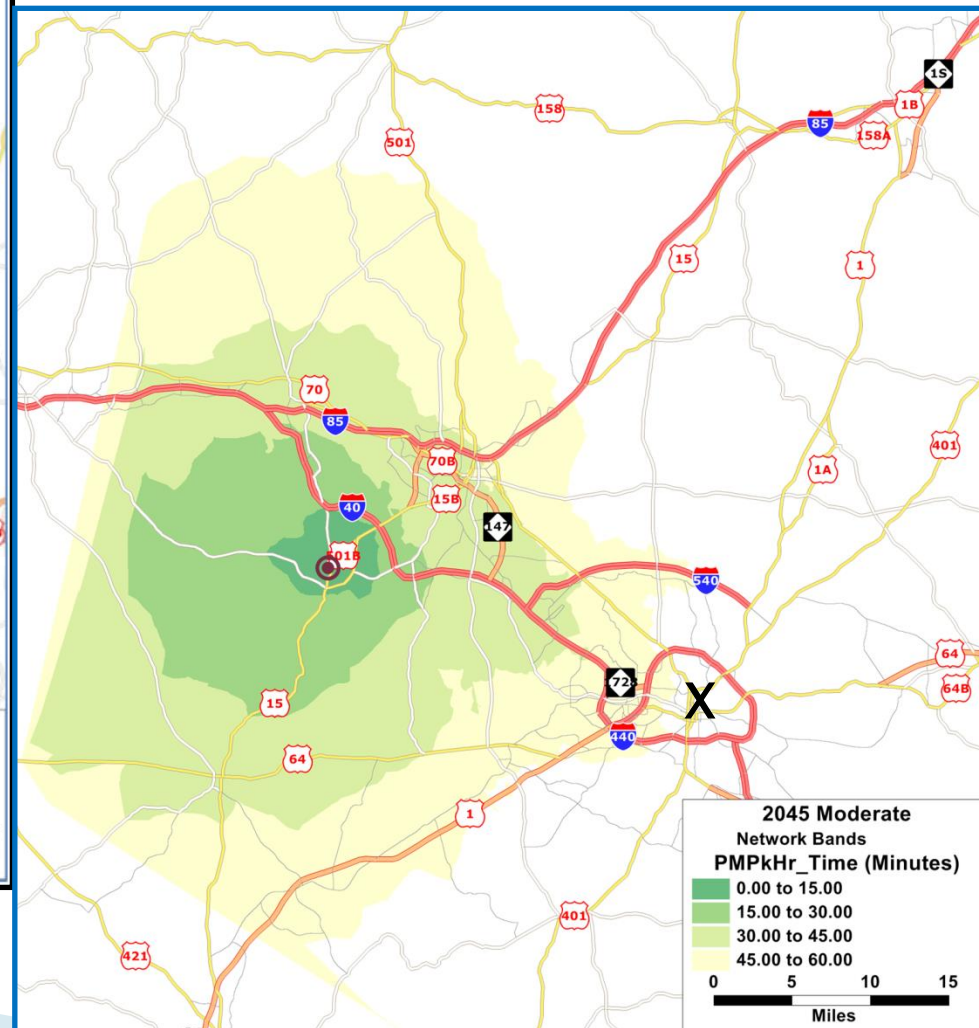
Travel Isochrones

2045 E+C



X = 45 to 60 min drive from
downtown Chapel Hill

2045 Mod-MTP

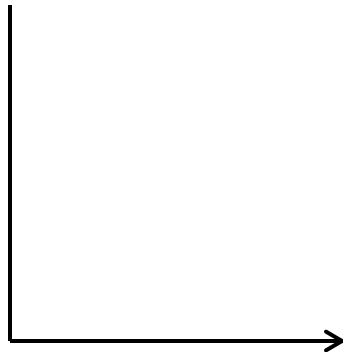


Travel Isochrones

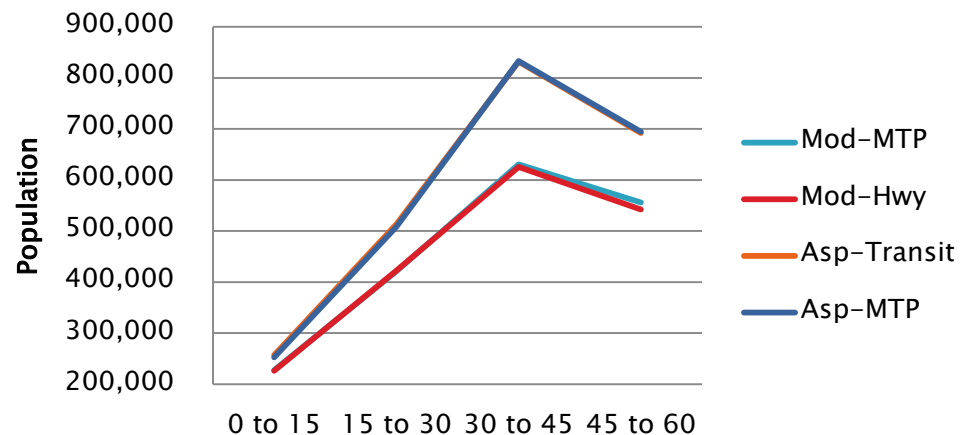


Durham, PM Peak Hour

Population		Scenarios:			
		Mod-MTP	Mod-Hwy	Asp-Transit	Asp-MTP
Isochrones (Minutes)	0 to 15	227,621	226,181	257,136	252,498
	15 to 30	421,432	422,573	513,419	508,204
	30 to 45	630,774	625,611	832,165	832,942
	45 to 60	556,138	542,261	692,272	694,337



Durham – Population Commuter Market



*** Available for area, population and employment

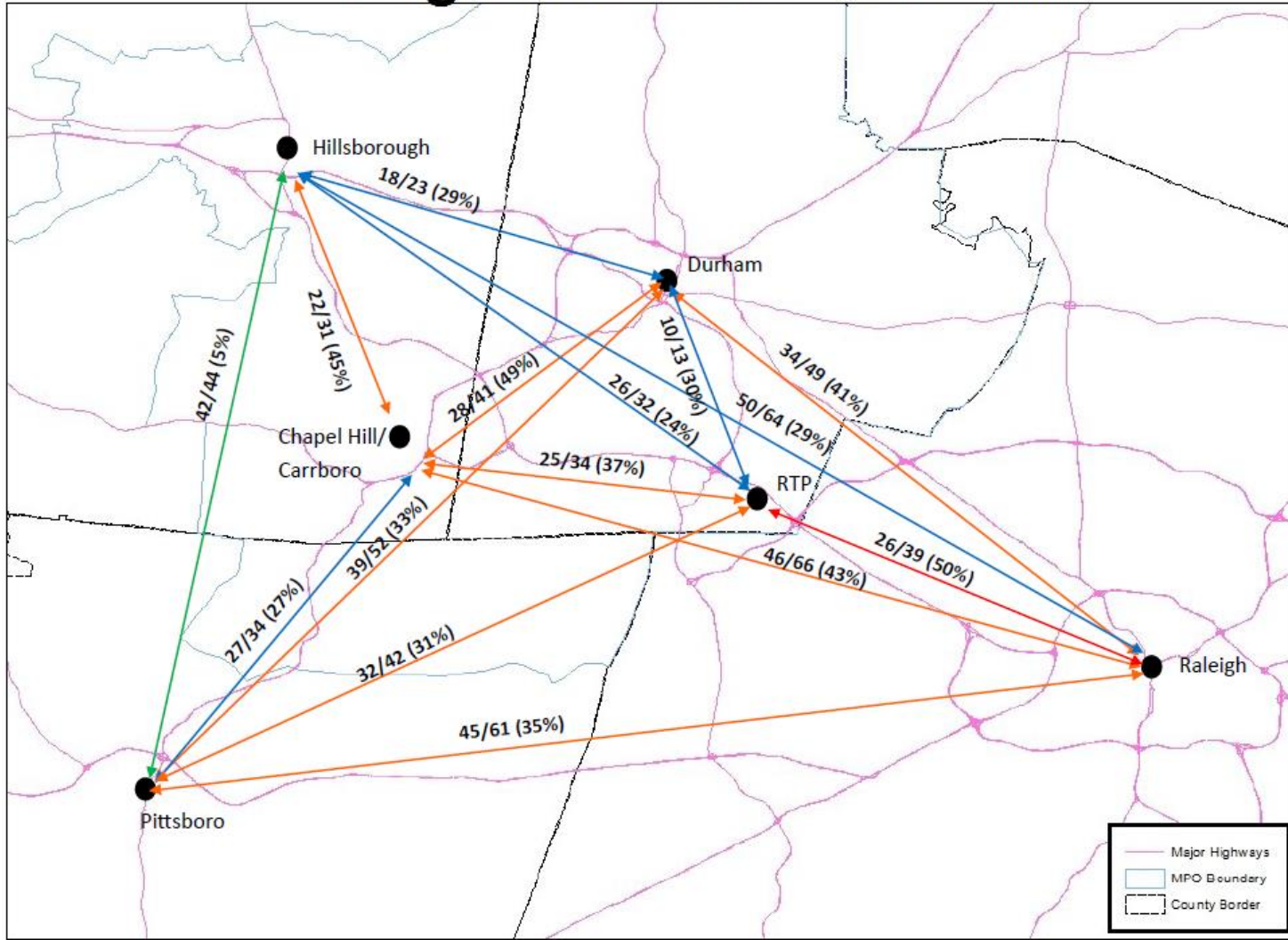
Travel Time

- ▶ Shows mobility forecasts to/from regional centers.
- ▶ Uses AM and PM peak hour (“peak of the peak”).
- ▶ Based on commute to/from six selected centers:
 - Downtown Durham
 - Chapel Hill/Carrboro
 - RTP
 - Hillsborough
 - Pittsboro
 - Downtown Raleigh
- ▶ Presented for each scenario:
 - Tables with morning and afternoon peak hour
 - Map of afternoon peak hour

Travel Time - Map

2013 Baseline/**Moderate-MTP*** scenario (% Change)

Regional Travel Time In Minutes



Travel Time – Tables

Compare 2013 and M1: PM Peak Travel time (percent increase)

		To					
		Durham	RTP	Raleigh	CH/Carrboro	Hillsborough	Pittsboro
<u>From</u>	Durham DT		29%	46%	36%	37%	43%
	RTP	31%		58%	32%	31%	43%
	Raleigh DT	36%	41%		35%	28%	41%
	CH/Carrboro	61%	43%	50%		63%	40%
	Hillsborough	21%	17%	29%	24%		5%
	Pittsboro	23%	18%	30%	12%	4%	

In Moderate Alternatives, Raleigh, Chapel Hill/Carrboro and Pittsboro have greatest travel time increases.

Aspirational Alternatives show lower travel time increases than Moderate Alternatives.

Congestion Maps (V/C)

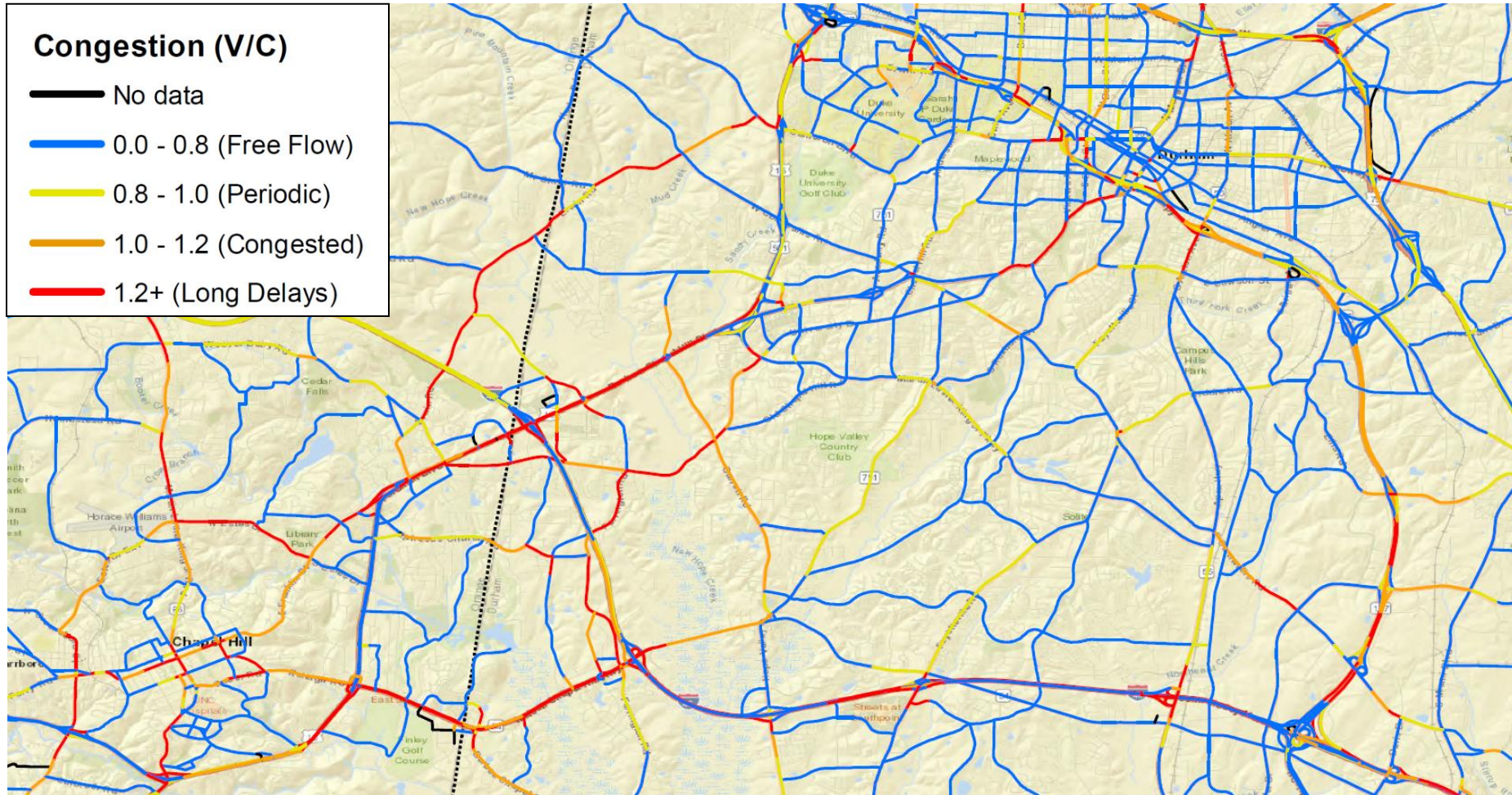
- ▶ Maps show the daily forecasted congestion on specific road segments
- ▶ "V/C" means the traffic volume divided by the traffic capacity of the road segment. (For example, a volume of 9,000 vehicles on a road that is capable of carrying 10,000 vehicles will produce a V/C of 0.9.)
- ▶ A V/C of 1.0 is equal to a Level of Service (LOS) of "E", which can be described as:

Limit of acceptable delay, unstable flow, poor signal progression, traffic near roadway capacity, frequent cycle failures.

- ▶ Web site has interactive map, and county-level and close-up poster maps

Mod-MTP Scenario

Orange and Red are bad!



With improvements, congestion persists in 2045:

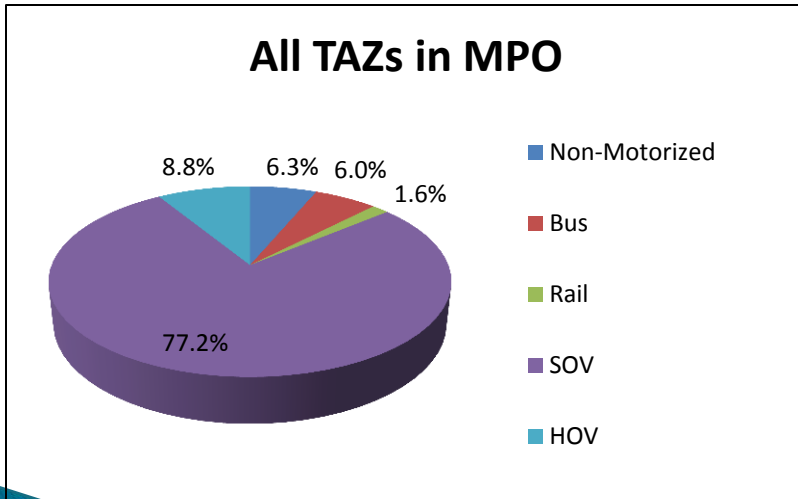
Durham: I-40, NC 147, US 15-50, NC 54, many in-town arterials

Chapel Hill/Carrboro: Fordham Blvd, NC 54, NC 86, many in-town arterials

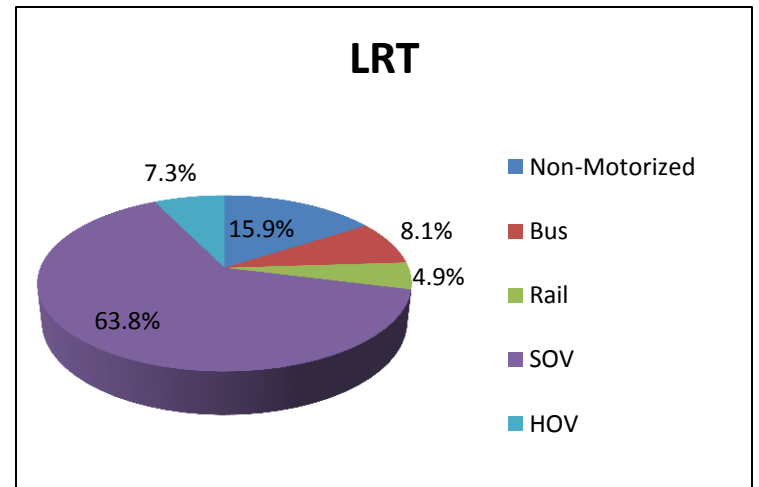


Travel Choice Neighborhoods

- ▶ Formerly called “transit TAZs” in 2040 MTP
- ▶ Compares mode choice for region with areas that have access to light rail transit and other high end transit



Example using **Asp-Transit** (AIM-High land use with extended transit)





Corridors

Travel Time Index

- ▶ New metric for DCHC MPO
- ▶ Shows congestion level and costs of delay for selected corridors

No build looks bad!

Improvements bring relief.

Land use bring relief?

Route	2015 Base Year	2045 E+C	Mod-MTP	Mod-Hwy	Asp-Transit	Asp-MTP
I-40						
I-40 EB (NC147 to NC 540)	1.3	2.0	1.8	1.7	1.6	1.6
I-40WB (NC 540 to NC147)	1.2	1.5	1.3	1.3	1.4	1.4
I-40EB (US 15/501 to NC 147)	1.3	2.4	2.0	2.2	1.7	1.7
I-40WB (NC 147 to US 15/501)	1.3	1.8	1.7	1.8	1.7	1.7
I-40EB (NC86 to US 15/501)	1.3	1.7	1.2	1.1	1.2	1.2
I-40WB (US 15/501 to NC86)	1.3	3.0	1.6	1.4	1.4	1.4
I-40EB (I-85 to NC 86)	1.2	1.2	1.1	1.1	1.1	1.1
I-40WB (NC 86 to I-85)	1.2	1.8	1.3	1.3	1.2	1.2



Corridors

Cost of Delay*

- These two corridors have similar levels of congestion (TTI's are the same)
- The cost of I-40 congestion is much higher because of the higher volume.

Route	2015 Base Year	2045 E+C	Mod-MTP	Mod-Hwy	Asp-Transit	Asp-MTP
I-40						
I-40 EB (NC147 to NC 540)	\$ 702	\$ 2,968	\$ 2,158	\$ 2,040	\$ 1,583	\$ 1,686
I-40WB (NC 540 to NC147)	\$ 385	\$ 1,406	\$ 831	\$ 854	\$ 1,105	\$ 1,036
Garrett Road (NC 54 to US 15/501)	\$ 75	\$ 507	\$ 343	\$ 298	\$ 250	\$ 252
Garrett Road (US 15/501 to NC 54)	\$ 86	\$ 543	\$ 360	\$ 389	\$ 253	\$ 260

* Cost per hour for auto and truck drivers' time.

Today's Action

- ▶ Provide comments

- ▶ Release the Alternatives Analysis for a 42-day public comment period.
 - Full set of public input activities:
 - August 9 through September 20
 - public open house; boards and commissions; local elected officials – schedule not final